REMARKS

The Final Office Action mailed October 16, 2008 has been carefully considered. Reconsideration in view of the following remarks is respectfully requested.

Interview Record

Applicants gratefully acknowledge the courtesy and consideration extended to Applicants' undersigned representative during the telephone interview with Examiner Ramadan on February 13, 2009.

During the interview, claim 1 as currently amended was presented to the Examiner Ramada for consideration. The Examiner indicated that claim 1 appeared to overcome the Tsuji et al. reference (JP 09308 126A; hereinafter, "Tsuji"), but that a search update needed to be performed.

Rejection(s) Under 35 U.S.C. §102

Claims 1-6 stand rejected under 35 U.S.C.§ 102(b) as allegedly being anticipated by Tsuji. Applicants respectfully traverse.

Claim 1 has been amended to state that, *inter alia*, the "charge power source unit detects the bypass currents flowing to said plural charge controllers," and that the control unit, "when bypass current begins to flow in all of the charge controllers to which the respective secondary batteries are connected, detects the minimum current value of the bypass current flowing to the plural charge controllers, and the charging current from the charge power source unit is reduced by the minimum value of these bypass currents." These features, support for which is found for example on page 14, lines 19-20 and page 10, lines 11-14, of Applicants' disclosure, are not disclosed in Tsuji.

Rather, in Tsuji, when the bypass current reaches saturation (maximum), the charging current is reduced merely by a predetermined amount. See for example Tsuji, para. [0005], lines 5-7 ("When the bypass of the charging current is saturated, the

charging is performed by reducing the charging current by a predetermined amount in a stepwise fashion); para. [0010], lines 12-14 ("Based on the saturation signal of the charging current, the charging device 6 reduces the charging current by the predetermined amount, and the bypass current control unit is returned from a saturated state to a state capable of bypassing."); and para. [0011] ("As described above, the charging device 6 performs charging by reducing the charging current in a stepwise fashion every time the charging device 6 receives the saturation signals. When the charging current is equal to or below the predetermined amount eventually, the charging is performed with the current equivalent to the predetermined amount. At this time, when the saturation signal is emitted from the bypass circuit 4, the output of the charging current is stopped and the charging is finished.)

The invention as claimed provides several advantages not realized by Tsuji. With reference to FIGS. 7A and 7B; the citation of lines 11 to 14 of page 10 "Additionally, when bypass current begins to flow in all of the charge controllers 200 to which the respective secondary batteries 50 is connected, the charging current from the charge power source unit 100 is reduced by the minimum value of these bypass currents"; the citation from line 24 of page 11 to line 2 of page 12 "The microcontroller 101 detects the minimum current value I of the bypass current flowing to the plural charge controllers 200, decreases the output current setting value of the constant current power source 102 by the minimum current portion I, and sets it"; and the citation of lines 3 to 4 of page 12 "the output current of the constant current power source 102 is reduced by the aforementioned minimum current value I", among the bypass current in all the cells shown in FIG. 7A, minimum value of the bypass current (I: secondary battery 50-1) is (approximately) zero by being controlled as shown in FIG. 7B. According to this, in the present application, an effect as described in lines 11 to 12 of the specification of the present application "In this manner, with the present charging device, it is possible to ensure the charging current necessary for charging while automatically reducing the charging current" is obtained. Therefore, in accordance with the structural features of the present invention, the above-described effects can be obtained.

FIG. 7A

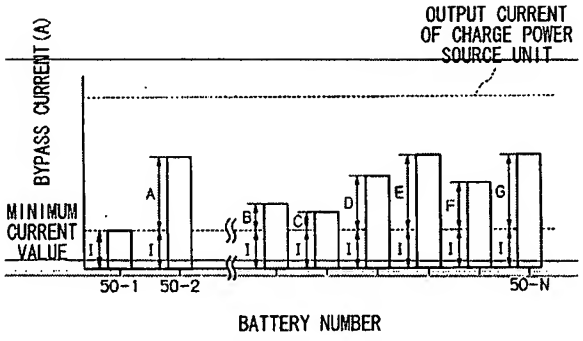
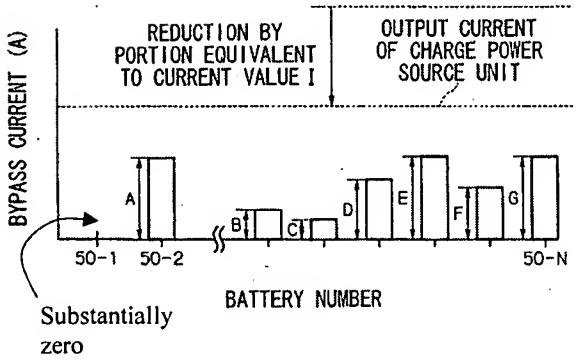


FIG. 7B

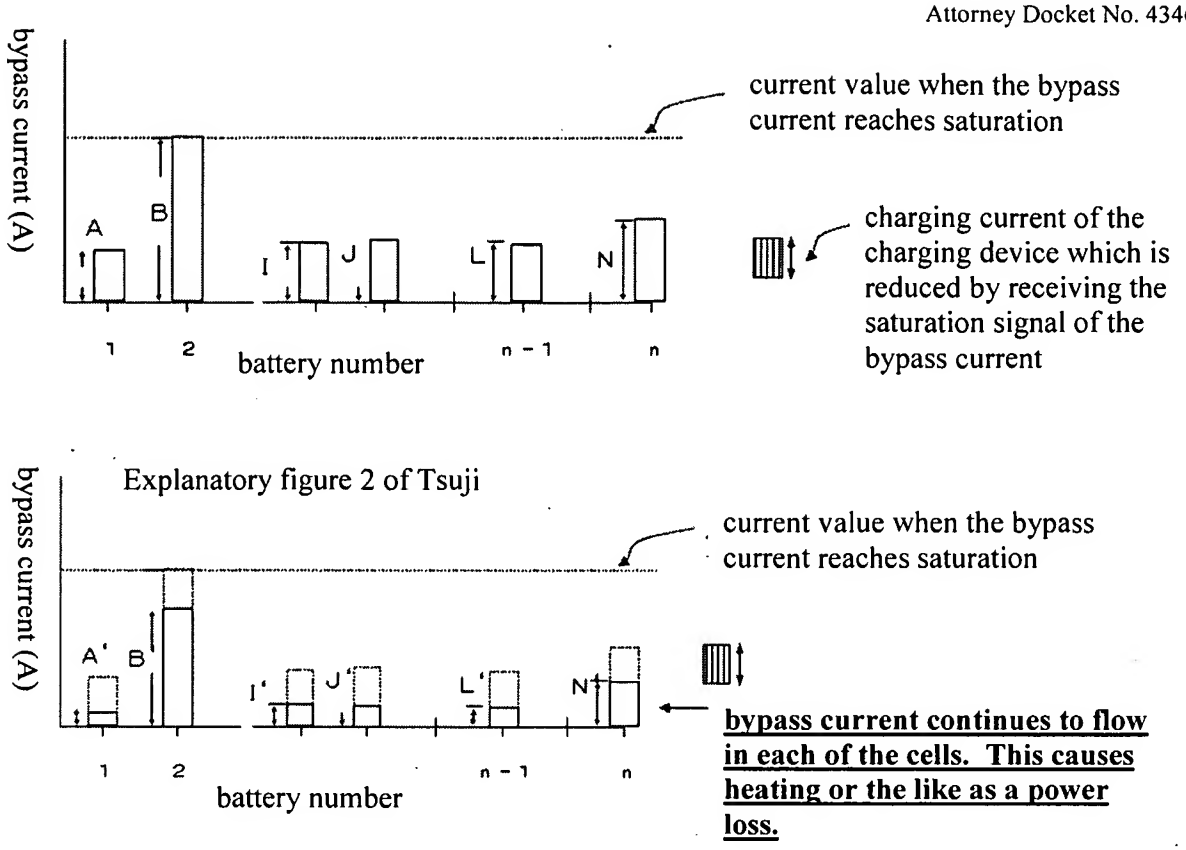


On the other hand, as described above, in Tsuji, when the bypass current reaches saturation (maximum), the charging current is reduced merely by a predetermined amount.

These features of Tsuji are not consistent with the contention in the Office Action that in Tsuji "the battery charger (6) controls the charging current until there is no current bypassed (bypass current is approximately zero) and the charging current then will be suspended (zero current)." (Para [0011]).

Furthermore, in accordance with the setting of the "predetermined value" in Tsuji, the bypass current flows in all the batteries. This leads to a power loss. Also, Tsuji receives signals from each of the bypass circuits by OR circuit (see citation of lines 6 to 8 of paragraph [0007] of Tsuji "From the bypass circuits 4, the saturation signal which is emitted when the bypass circuit is saturated, is output to the charging device 6 via OR circuit"). Accordingly, when any of the cells reaches saturation, the reduction of the current is performed. Also, this state is maintained until the bypass current of any cells is saturated, that is, the bypass current keeps flowing in all the cells and the power loss keeps creating. Please refer to the below explanatory figures 1 and 2 of Tsuji.

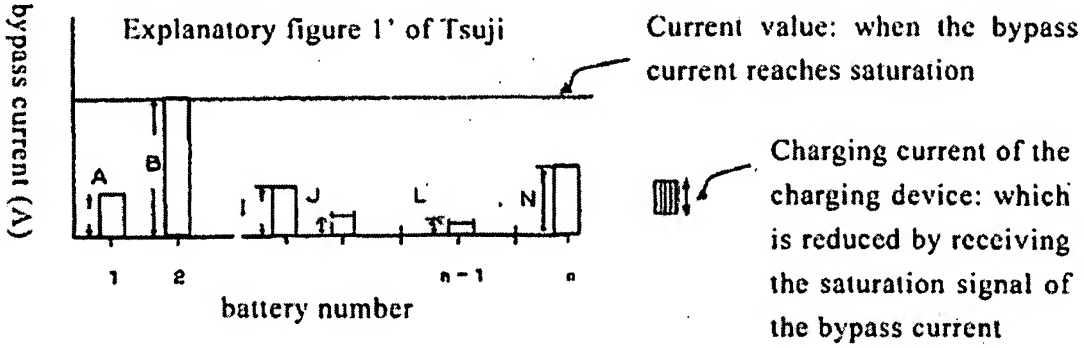
Explanatory figure 1 of Tsuji

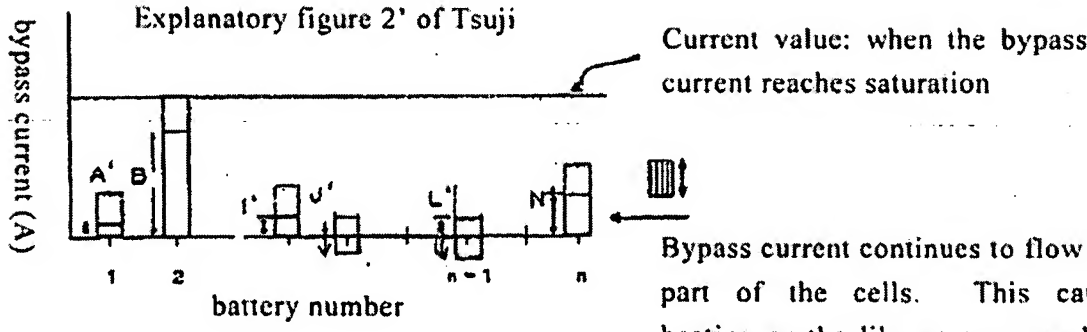


Accordingly, in Tsuji, there is no disclosure or indication such as "the control unit, when bypass current begins to flow in all of the charge controllers to which the respective secondary batteries is connected, detects the minimum current value of the bypass current flowing to the plural charge controllers, and the charging current from the charge power source unit is reduced by the minimum value of these bypass currents" as described in the specification of the present application. Again, in Tsuji, when the bypass current reaches saturation (maximum), the charging current is reduced merely by a predetermined amount.

Moreover, in the case where an actual charging is performed, there might be a state in which "the bypass currents do not flow in all the cells". In this state, if the saturated current is detected in any cells, in Tsuji, the charging current flowing to all the cells is equally

reduced. Accordingly, even in a cell which needs current for the charging, the current is reduced and the charging in the cell is delayed and disturbed. Please refer to the below figures 1' and 2' relating to Tsuji.





Accordingly, in the present invention, when the bypass current flows in all the batteries, the amount of current equivalent to the minimum bypass current is reduced form the output of the charging device. In Tsuji, when the OR circuit detects that any cell reaches the maximum value of the bypass circuit, the charging current is equally reduced regardless of the amount of the bypass current in each of the cells. Therefore, in the case where the bypass current flows in all the cells, or in the case where the amount of the bypass current, which is

equal to or smaller than the current value to be reduced, flows in any cell, there is a possibility that the charging current in the cell could be reduced below the current necessary for charging. In the present invention, there is no such possibility which might occur during charging.

Conclusion

In view of the preceding discussion, Applicants respectfully urge that the claims of the present application define patentable subject matter and should be passed to allowance.

If the Examiner believes that a telephone call would help advance prosecution of the present invention, the Examiner is kindly invited to call the undersigned attorney at the number below.

Please charge any additional required fees, including those necessary to obtain extensions of time to render timely the filing of the instant Amendment and/or Reply to Office Action, or credit any overpayment not otherwise credited, to our deposit account no. 50-3557.

Respectfully submitted,

NIXON PEABODY LLP

Dated: February 17, 2009

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